RESULTS OF EXPLORATORY TEST BORINGS
KAILUA HEIGHTS SUBDIVISION UNIT 8
KAILUA, OAHU, HAWAII
TMK: 4-2-02: 23 & 29

for

LONE STAR HAWAII, INC.

W. O. 148-A

March 10, 1977

ERNEST K. HIRATA & ASSOCIATES, INC.

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
1236 South King Street • Honolulu, Hawaii 96814 • Phone 531-5733

March 10, 1977

W. O. 148-A

Lone Star Hawaii, Inc.
Suite 1480
Pacific Trade Center
190 South King Street
Honolulu, Hawaii 96813

Attention: Mr. Gail Sims

Subject: Results of Exploratory Test Borings
Kailua Heights Subdivision Unit 8
Kailua, Oahu, Hawaii
TMK: 4-2-02: 23 & 29

Gentlemen:

Two exploratory borings were placed near the existing cut slopes facing Auwaiku Street Extension at lot numbers 72 and 122 to determine whether basalt would be encountered during grading of the cut slopes. The exploratory boring locations are shown on the enclosed Grading Plan. The soils encountered are shown on the Boring Logs, Plates A1 through A5.

The upper 15 feet of soil at boring number B1-A can be classified as a highly weathered rock in a dense condition. Underlying the weathered rock at an approximate elevation of 251.5 was brownish gray basalt with slightly weathered seams and fractures. Purplish gray weathered basalt was encountered at an elevation of 226.5

down to the maximum depths drilled corresponding to an elevation of 192.5.

The soils encountered in boring number B2-A can be classified as a highly weathered rock from the surface. The boring was drilled to a depth of 50 feet, to approximate elevation 181, with no appreciable change in soil condition.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of our exploratory borings, we believe that the basalt stratum encountered in boring number B1-A will probably daylight out in mid-slope during grading.

Cut slope gradients of $\frac{1}{2}$:1 (horizontal to vertical) may be used in areas where either basalt or weathered basalt is encountered, while cut slope gradients of 1:1 should be used in areas where the highly weathered rock is encountered.

A maximum vertical height of 20 feet between benches may be used for cut slopes in either the basalt or in the highly weathered rock.

A maximum cut slope gradient of 1:1 should be used for side slopes between lots located along Auwaiku Street Extension.

Visual inspection was also made along the proposed cut slopes facing Aulepe Street Extension. Basalt formation was exposed

along the proposed cut slope. Maximum cut slope gradients of $\frac{1}{2}$:1 may be used for slopes encountering the basalt formation. A maximum vertical height of 20 feet between benches may be used for cut slopes in this area.

Respectfully submitted,

Ernest K. Hirata & Associates, Inc.

Ernest K. Hirata

Ernest K. Hirata P.E. 2732

EKH:yk

Encl: Boring Logs Plates A1 through A5
Grading Plan

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BORING LOG

BORING NO. B1-A DRIVING WT. 140 lb. DATE OF DRILLING 2-24-77

SURFACE ELEV. 266.5±* DROP 30 in. W.O. 148-A

DEPTH FEET	CORE	BAG	PENETRATION RESIST. BLOWS/6 inches	DRY DENSITY PCF	MOISTURE CONTENT %	RELATIVE COMPACTION %	DIRECT SHEAR STRENGTH PARAMETERS Ø	DIRECT SHEAR STRENGTH PARAMETERS C	CLASSIFICATION (% Sand, % Silt, % Clay)
0									HIGHLY WEATHERED ROCK- Mottled orange brown, slightly moist, dense, with weathered seams.
5									
10		x	20/2"		No Recovery				
15									BASALT-Brownish gray, medium hard, slightly weathered seams and fractures.
20		x	25/2"		No Recovery				
25									Grading hard from 26 feet.
30		x	20/0.5"		No Recovery				

Plate A1

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BORING LOG

BORING NO. B1-A (cont.) DRIVING WT. 140 lb. DATE OF DRILLING 2-25-77

SURFACE ELEV. 266.5±* DROP 30 in. W.O. 148-A

DEPTH FEET	CORE	BAG	PENETRATION RESIST. BLOWS/6 inches	DRY DENSITY PCF	MOISTURE CONTENT %	RELATIVE COMPACTION %	DIRECT SHEAR STRENGTH PARAMETERS Ø	DIRECT SHEAR STRENGTH PARAMETERS C	CLASSIFICATION (% Sand, % Silt, % Clay)
30									Begin NX Core from 30 feet.
									76% Recovery from 30 to 35 feet. Weathered seams at 32 and 33 feet.
35									96% Recovery from 35 to 40 feet. Fractured and weathered from 37 to 38 feet.
40									Clay seam at 40 feet
									WEATHERED BASALT-Purplish gray, hard, with fractures and weathered seams.
									100% Recovery from 40 to 44 feet.
45									34% Recovery from 44 to 49 feet.
									34% Recovery from 49 to 54 feet.
50									
									22% Recovery from 54 to 59 feet.
55									
									98% Recovery from 59 to 64 feet.
60									Plate A2

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BORING LOG

BORING NO. B1-A (cont.) DRIVING WT. 140 lb. DATE OF DRILLING 3-1-77

SURFACE ELEV. 266.5±* DROP 30 in. W.O. 148-A

DEPTH FEET	CORE	BAG	PENETRATION RESIST. BLOWS/6 inches	DRY DENSITY PCF	MOISTURE CONTENT %	RELATIVE COMPACTION %	DIRECT SHEAR STRENGTH PARAMETERS Ø	DIRECT SHEAR STRENGTH PARAMETERS C	CLASSIFICATION (% Sand, % Silt, % Clay)
60									82% Recovery from 64 to 69 feet.
65									BASALT-Gray, hard, slightly weathered with fractures and weathered seams. 90% Recovery from 69 to 74 feet.
70									
75									End boring at 74 feet.
80									* Elevation obtained from VTN-Pacific, Inc.
85									
90									

Plate A3

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BORING LOG

BORING NO. B2-A DRIVING WT. 140 lb. DATE OF DRILLING 3-2-77

SURFACE ELEV. 231+* DROP 30 in. W.O. 148-A

DEPTH FEET	CORE	BAG	PENETRATION RESIST. BLOWS/6 inches	DRY DENSITY PCF	MOISTURE CONTENT %	RELATIVE COMPACTION %	DIRECT SHEAR STRENGTH PARAMETERS Ø	DIRECT SHEAR STRENGTH PARAMETERS C	CLASSIFICATION (% Sand, % Silt, % Clay)
0									HIGHLY WEATHERED ROCK- Mottled orange brown, slightly moist, stiff and medium hard, with weathered seams.
5									Weathered seam at 5 feet
10	x		40/3" No Recovery						Weathered seam from 11 to 12.5 feet.
15									
20	x		52	108.0	13.8				
25	x		15 24 50/5"	110.3	17.5				
30									

Plate A4

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BORING LOG

BORING NO. B2-A DRIVING WT. 140 lb. DATE OF DRILLING 3-3-77

SURFACE ELEV. 231+* DROP 30 in. W.O. 148-A

DEPTH FEET	CORE	BAG	PENETRATION RESIST. BLOWS/6 inches	DRY DENSITY PCF	MOISTURE CONTENT %	RELATIVE COMPACTION %	DIRECT SHEAR STRENGTH PARAMETERS Ø	DIRECT SHEAR STRENGTH PARAMETERS C	CLASSIFICATION (% Sand, % Silt, % Clay)
30		x	40/4"	102.4	14.4				
35		x	10/0.0"		No Penetration				Begin NX Core from 35 feet. 62% Recovery from 35 to 40 feet. 30% Recovery from 40 to 45 feet. 64% Recovery from 45 to 50 feet.
40									
45									
50									End boring at 50 feet.
55									
60									

* Elevation obtained from VTN-Pacific, Inc.

Plate A5